Work Plan:

Entire research work is divided in to 4 half years. Following is the detailed work plan for all the half years.

Ist Six months –

- Review the literature work carried out by different scholars related to evaluation of quality of water.
- Visit different laboratories concerned with the water treatments and understand the process of water quality evolution.
- Discuss the work plan and methodology with the guide in detail and formulate a detailed plan to complete the research work as per the timelines.
- University Visit to complete the course work and submit the synopsis.

2nd Six months –

- Sample collection as per the methodology
- Analyzing the samples as defined in the methodology
- Prepare a detailed report of all the analysis done based on the findings and observations.

3rd Six months –

- Repeat the same process followed in 2nd six months but in different seasons to understand the variations in the quality of water in different seasons.

4th Six months –

- A detailed study of the observation of all samples in comparison with the standards.
- Prepare the thesis and get it reviewed by the guide
- Final thesis submission in the University for the final approval and to process for the Ph.D., Degree to be awarded.

Methodology

Site selection in study area:

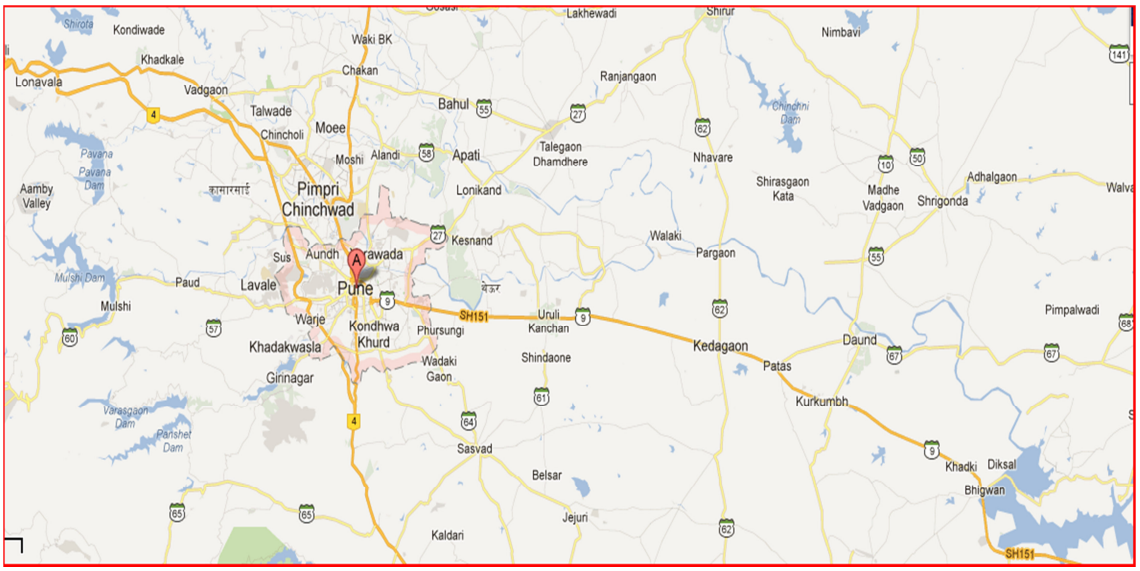
A total of 10 sites are identified as sample collections points for the study of water quality in the study area. Pune has 3 major Rivers namely Mula River, Mutha River and Pavana River flowing thorough the city and mergers in to Bhima River which is tributary of Krishna River. Dams were constructed on all these 3 rivers before

entering to the Pune city. In this research work, I am considering these dams as the origin of these rivers, from where the water will flow into the Pune city.

Origins of these 3 Rivers are considered as Samples 1-3, which means the above mentioned dams are the 3 sites. Samples 4-6 are collected from locations between the origins of 3 rivers and before they reach Pune city. Another 3 more samples, 7-9 will be selected inside the Pune city before they merge in to each other. A last sample, 10 will be collected at the point, where all the 3 rivers are merged and moving out of the Pune city

1. Mulshi Dam – Mula River
2. Panshet Dam – Mutha River
3. Pavana Dam – Pavana River
4. Paud – Mula River
5. Upstream of Khadakwasla dam – Mutha River
6. Bevad Ovhal – Pavana River
7. Aundh – Mula River
8. Downstream of Khadakwasla dam – Mutha River
9. Sanghvi – Pavana River
10. Yerwada , Pune

P



Pune City

Sample collection and Time intervals:

At every site at least one sample is collected per season. The Preferable time to collect sample in summer season is between Apr-May, in winter is between Dec-Jan & in rainy season is between Jul-Aug of any calendar year.

Digital photography of selected spots and water samples will be taken.

Analysis of Samples:

Analysis of samples is broadly divided in to Physical and Chemical testing's

Physical testing includes

- Colour using Platinum Cobalt method, Taste & Odour test.
- Temperature measurement at the time of sample collection by using good Mercury filled Celsius thermometer.
- Suspended Matters by Volumetric Method
- Turbidity by Nephelometric Method.

Chemical Testing includes

- pH using pHmeters

- Total Dissolved Solids (TDS) by using Gravimetric method.
- Electrical Conductance using Conductivity Meter
- Chloride using Titrimetrically using $AgNo_3$ and K_2CrO_4.
- Fluoride using Sepctro photo meter.
- Sulphate using Turbidimetric method.
- Nitrogen using Colourimetric method
- Dissolved Oxygen using Winkler Method
- Iron by using Phenanthroline Method
- Silica by Molybdosylicate method
- Heavy metals method (Cd, Zn, Pb, Co, Ni, Mo) by atomic absorption spectro photometric method
- Phosphorous by Stanuschloride method